Presentation by National Coalition for Health Integration("NCHI")

Nevada Health Information Technology Blue Ribbon Task Force

January 8, 2010

The NCHI Platform

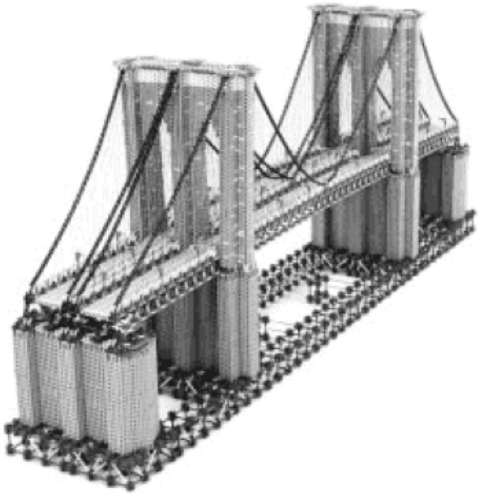
A grid computing approach to health information sharing

Katherine Tavitian
National Coalition for Health Information
CEO
kathy.tavitian@nchiconnect.org

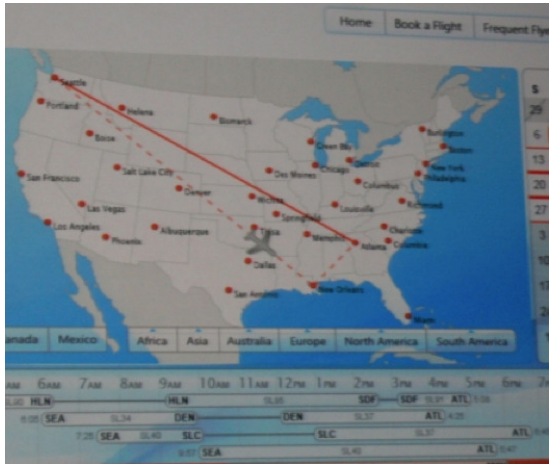
Carl Kesselman
University of Southern California
Co-Director
Center for Health Informatics

Important characteristics

- We must integrate systems that may not have worked together before
- These are human systems, with differing goals, incentives, capabilities
- All components are dynamic—change is the norm, not the exception
- Processes are evolving rapidly too



We are not building something simple like a bridge or an airline reservation system



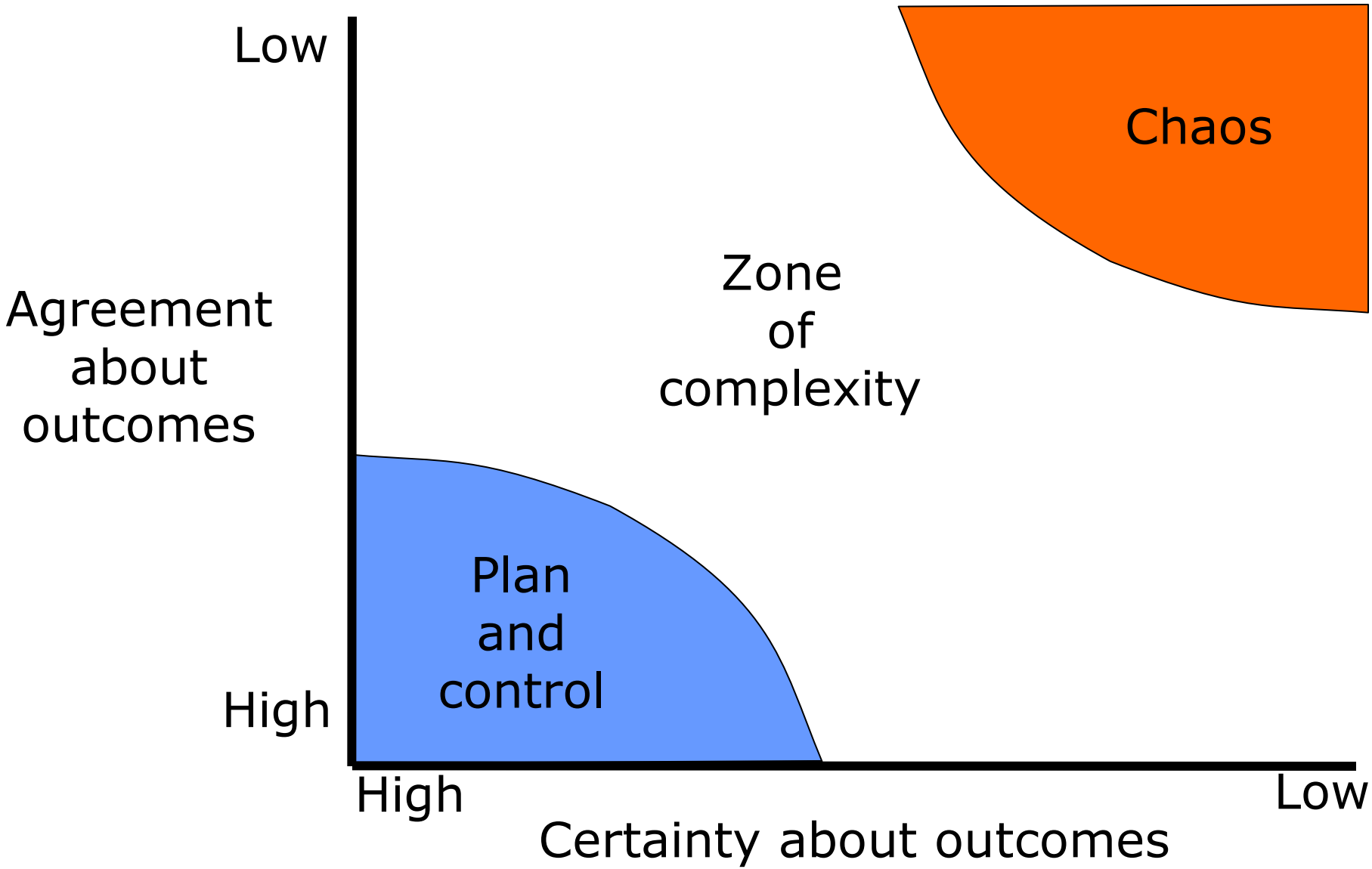
Healthcare is a **complex adaptive system**

A complex adaptive system is a collection of individual agents that have the freedom to act in ways that are not always predictable and whose actions are interconnected such that one agent's actions changes the context for other agents.

Crossing the Quality Chasm, IOM, 2001; pp 312-13

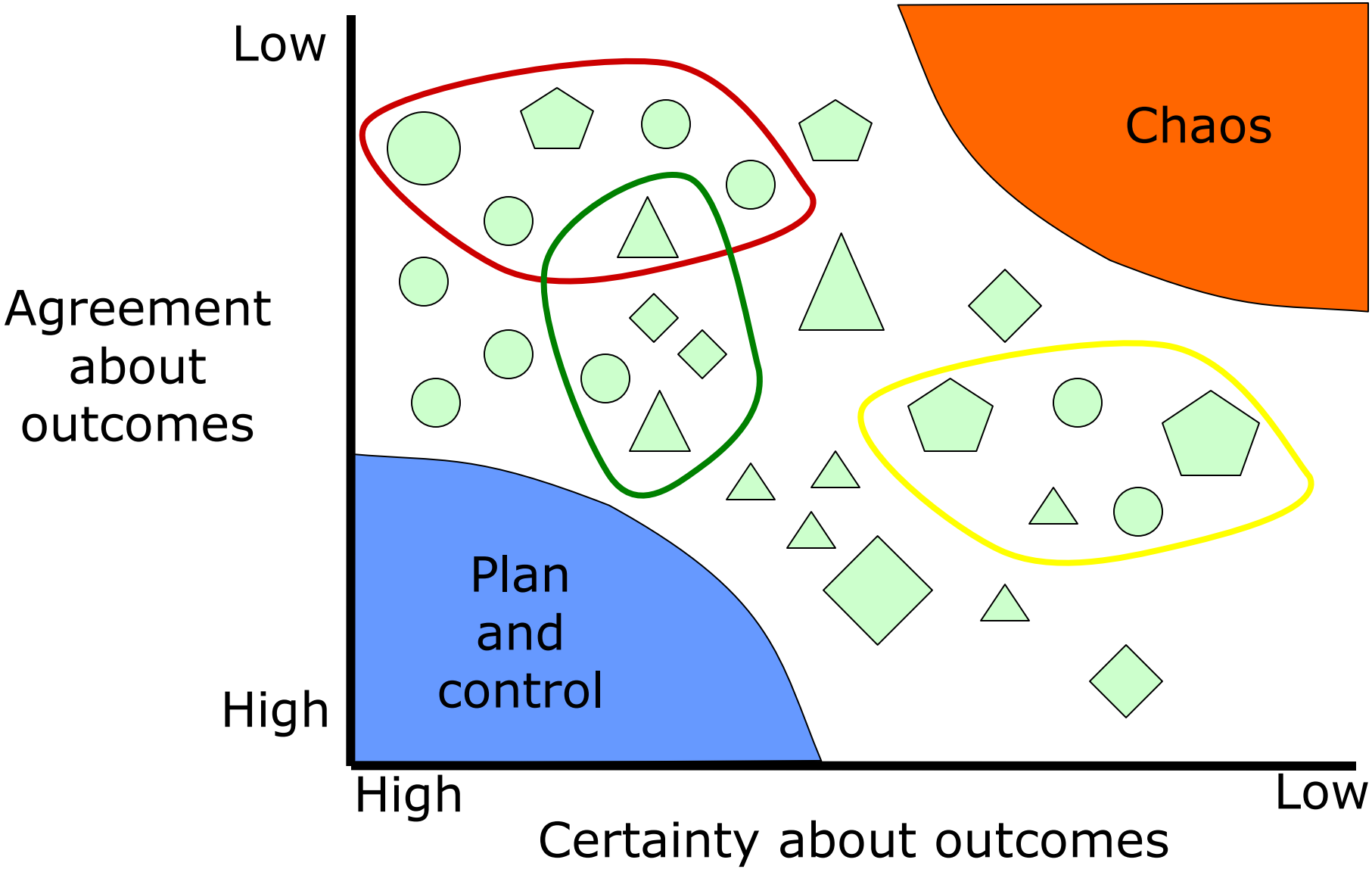
- Non-linear and dynamic
- Agents are independent and intelligent
- Goals and behaviors often in conflict
- Self-organization through adaptation and learning
- No single point(s) of control
- Hierarchical decomp-osition has limited value

We need to function in the **zone of complexity**

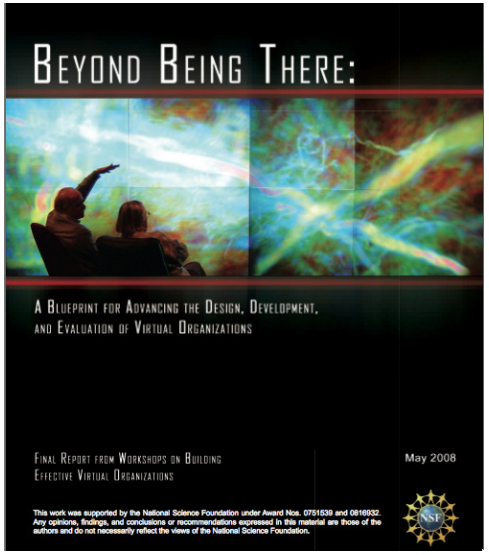


Ralph Stacey, *Complexity and Creativity in Organizations*, 1996

We need to function in the **zone of complexity**



Ralph Stacey, *Complexity and Creativity in Organizations*, 1996



We call these groupings **virtual organizations** (VOs)

A set of individuals and/or institutions engaged in the controlled sharing of resources in pursuit of a common goal

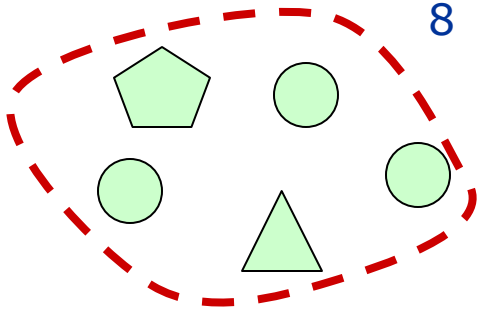
Healthcare = dynamic, overlapping VOs, linking

- Patient – primary care
- Sub-specialist – hospital
- Pharmacy – laboratory
- Insurer – …

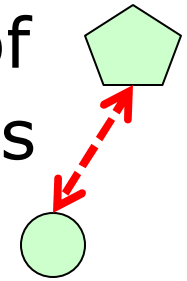
But U.S. health system is marked by fragmented and inefficient VOs with insufficient mechanisms for controlled sharing

I advocate … a model of virtual integration rather than true vertical integration … G. Halvorson, CEO Kaiser

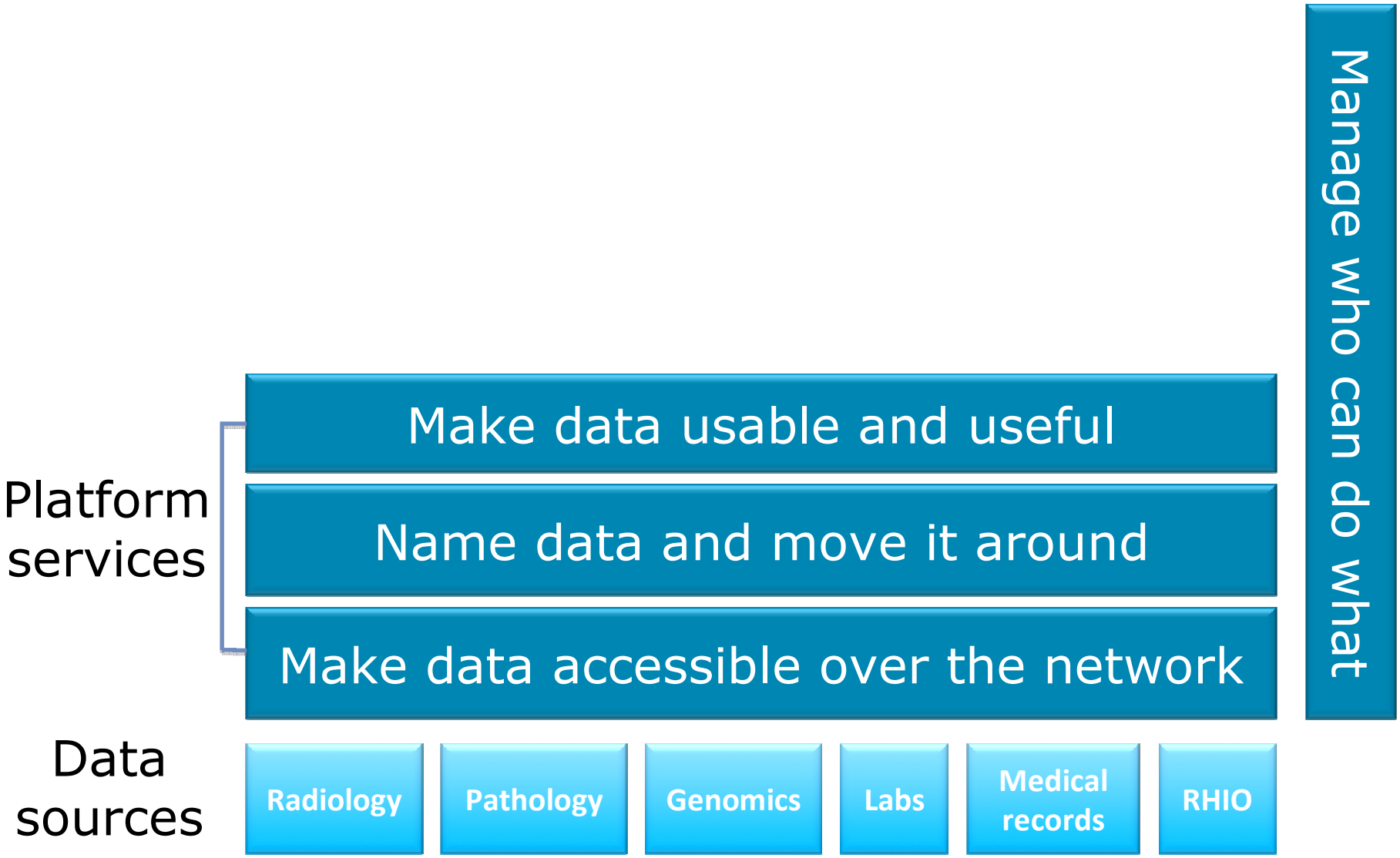
The Grid paradigm



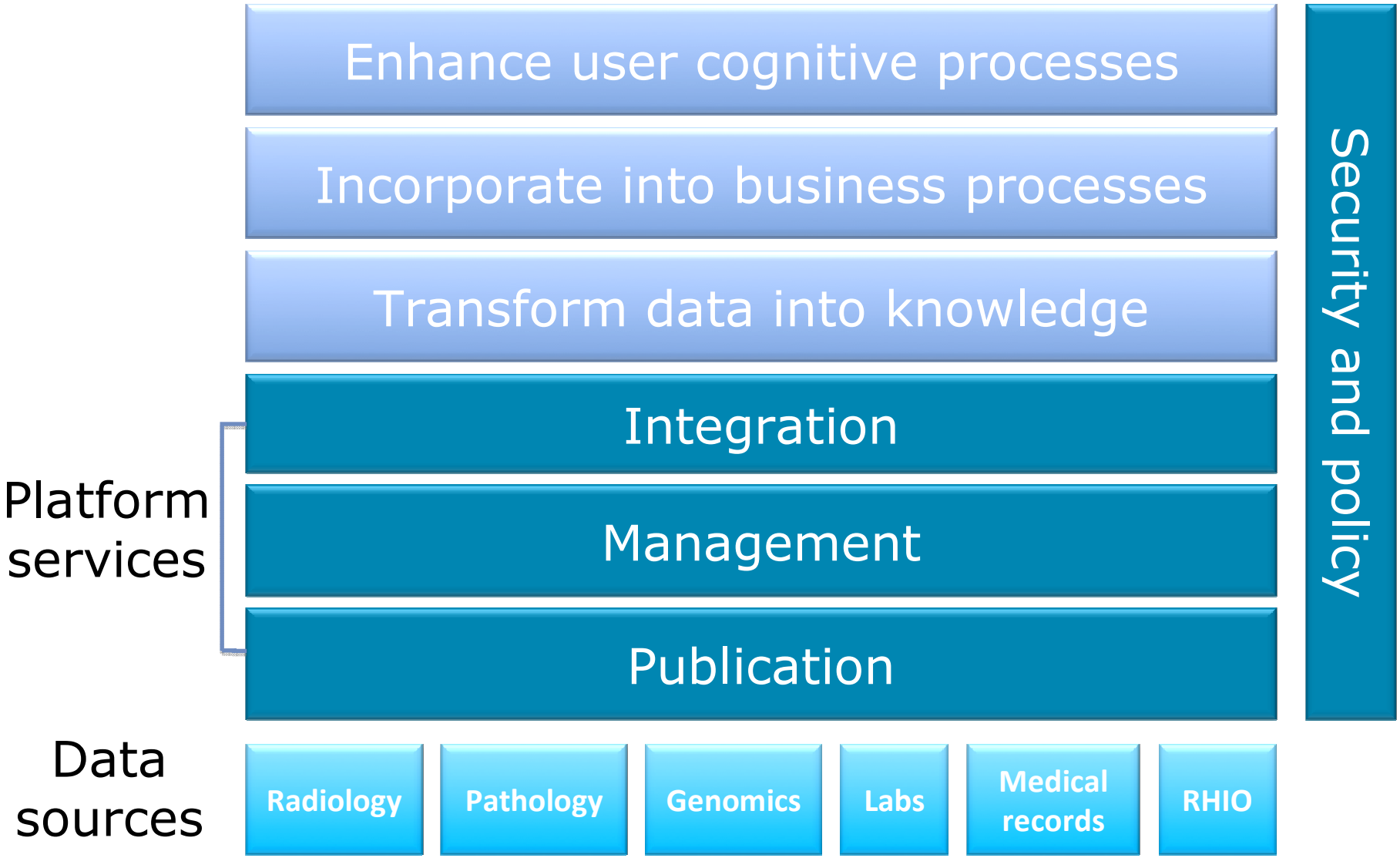
- Principles and mechanisms for dynamic VOs
- Leverage service oriented architecture (SOA)
- Loose coupling of data and services
- Open software and architecture



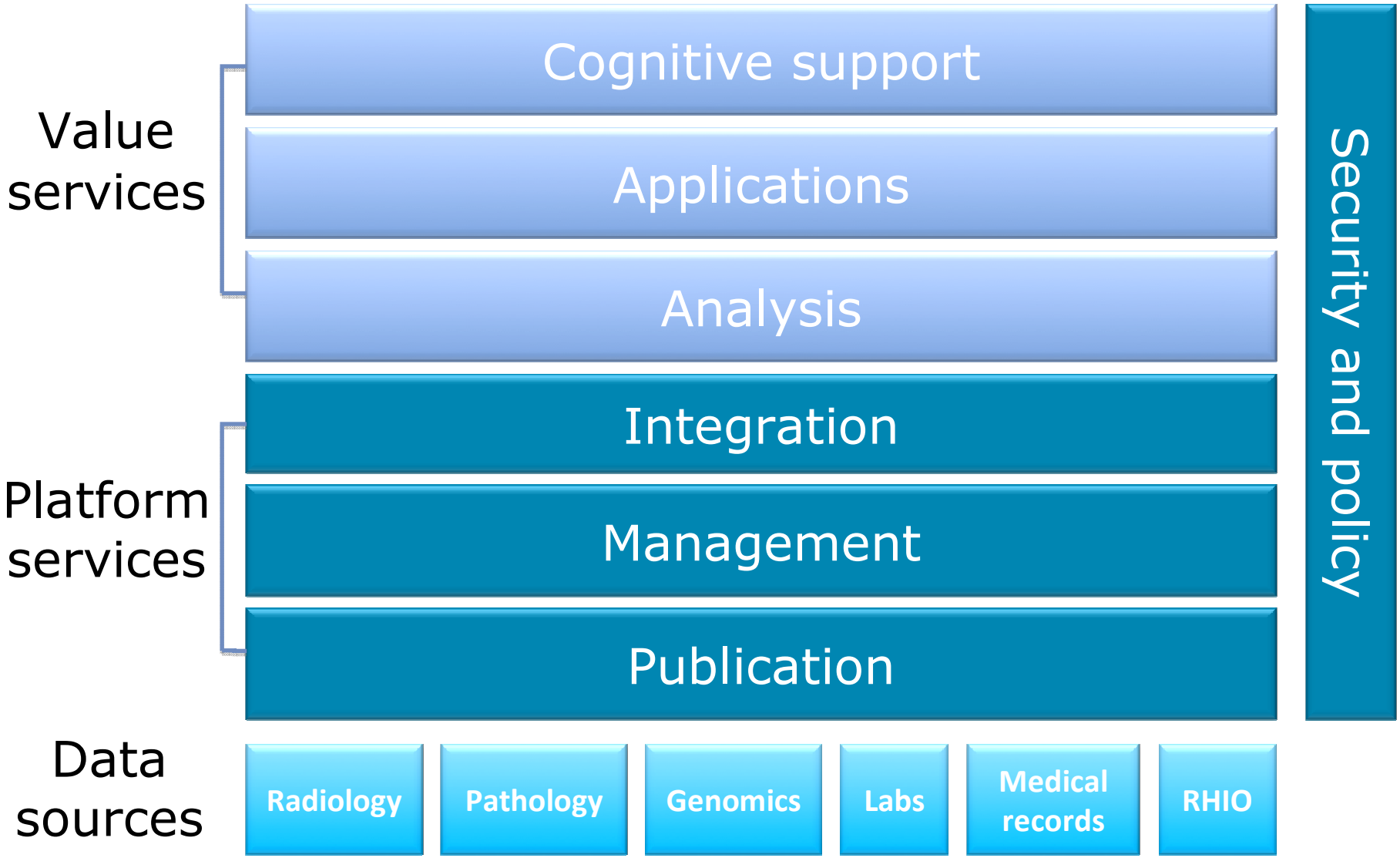
The Grid paradigm and healthcare information integration



The Grid paradigm and healthcare information integration

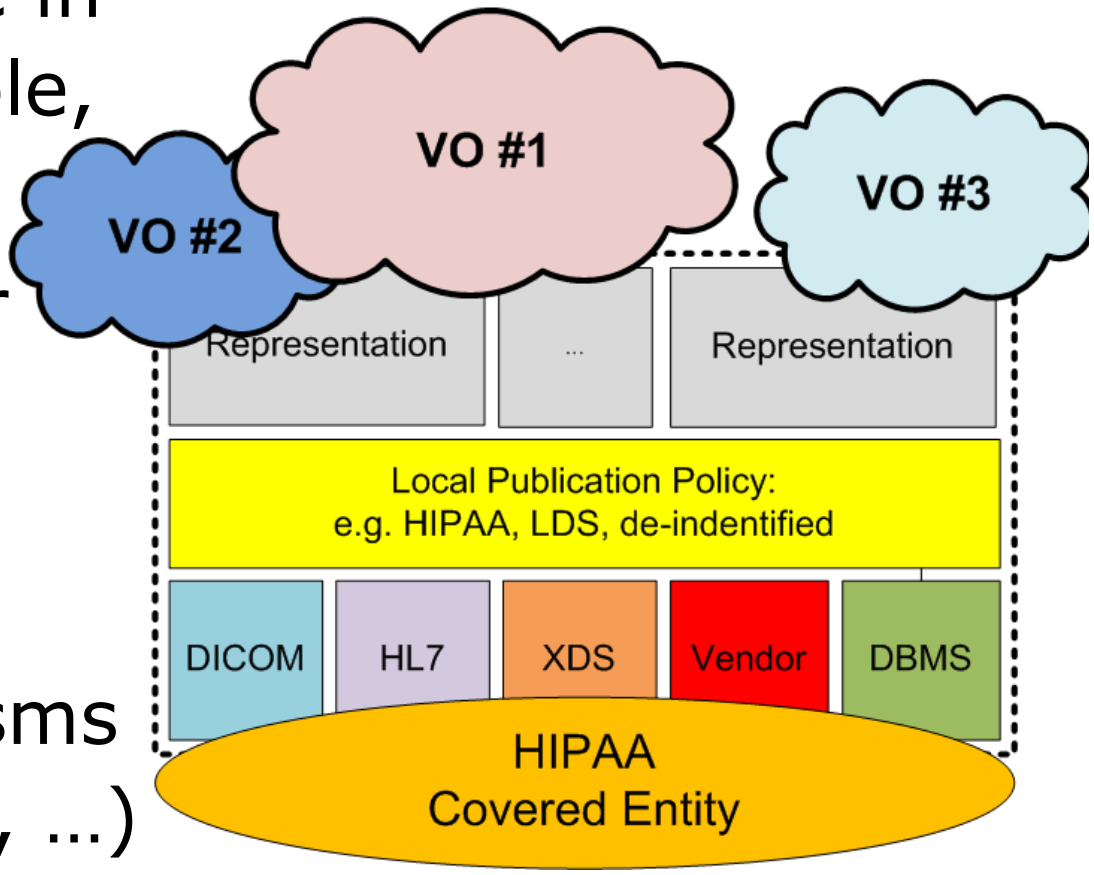


The Grid paradigm and healthcare information integration



Publication:
Make information accessible

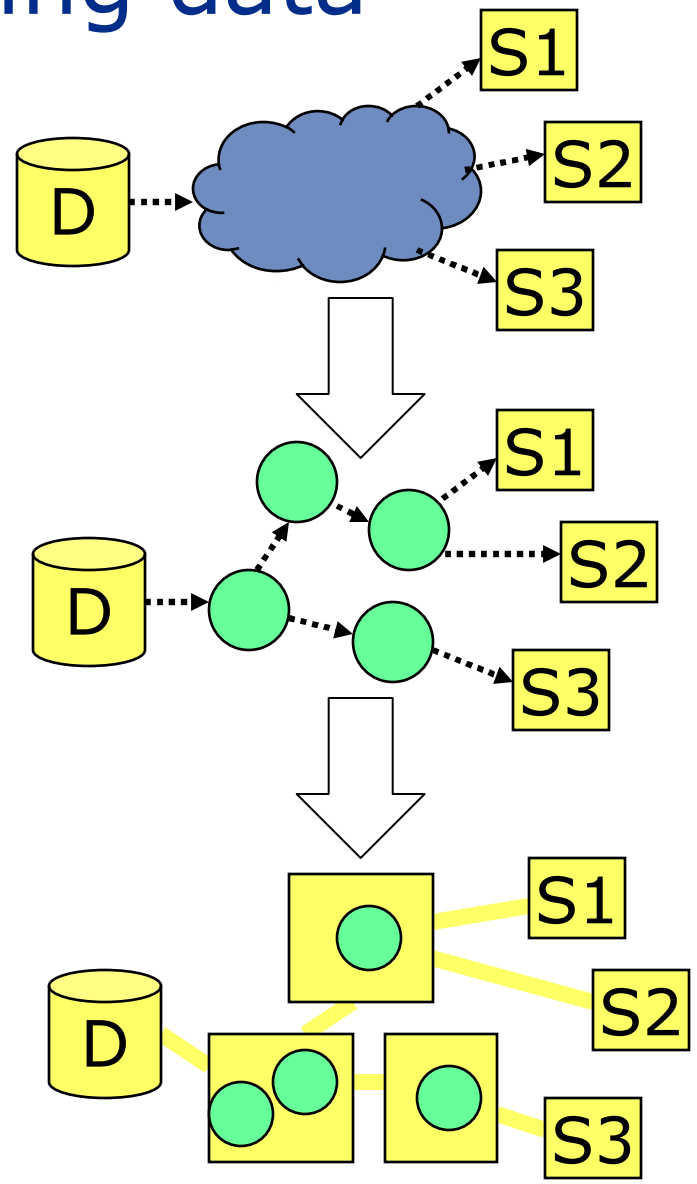
- Make data available in a remotely accessible, reusable manner
- Leave mediation for integration layer
- Gateway from local policy/protocol into wide area mechanisms (transport, security, …)



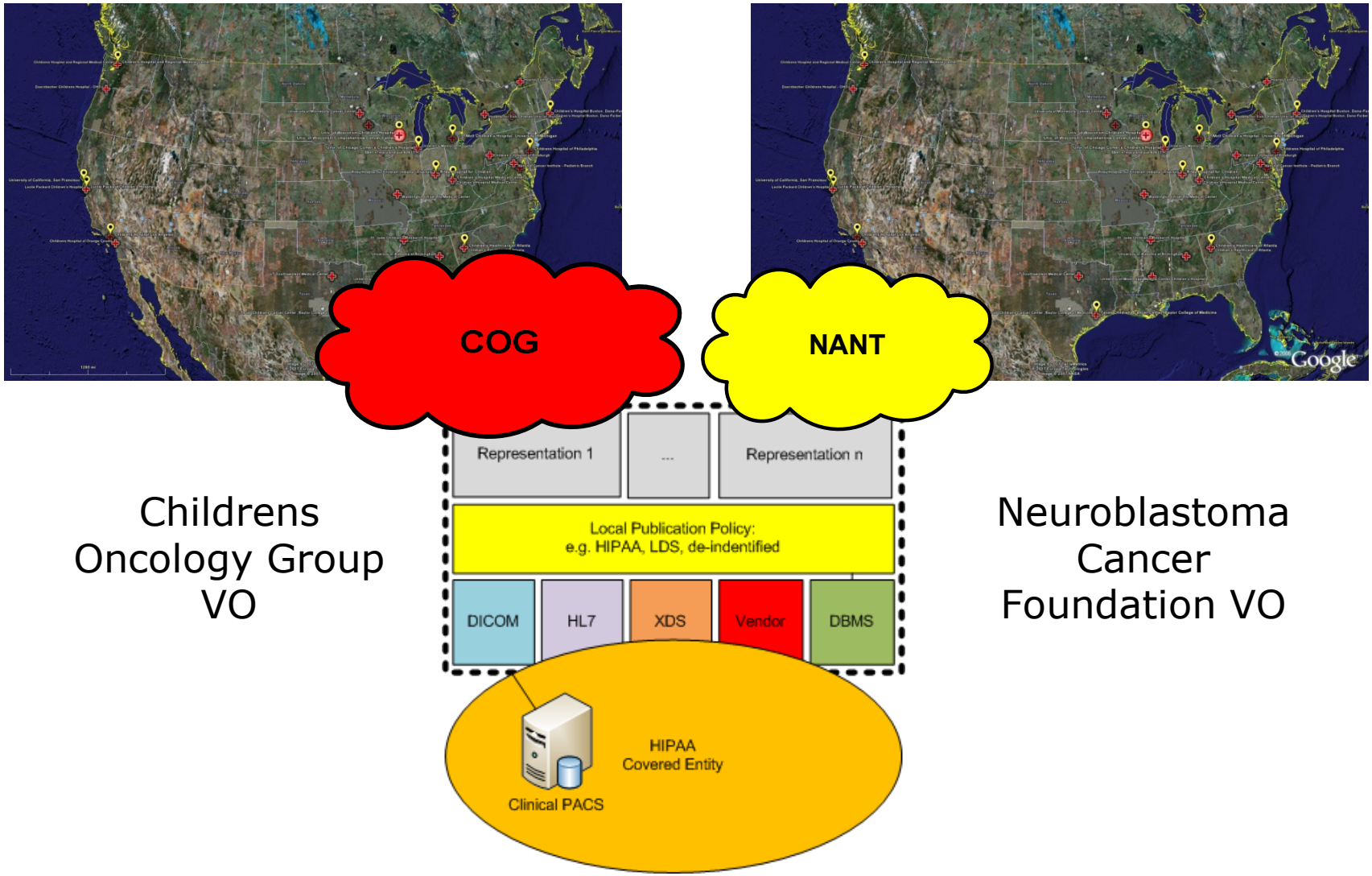
Management: Naming and moving data

Persistent, uniform global naming of objects, independent of type

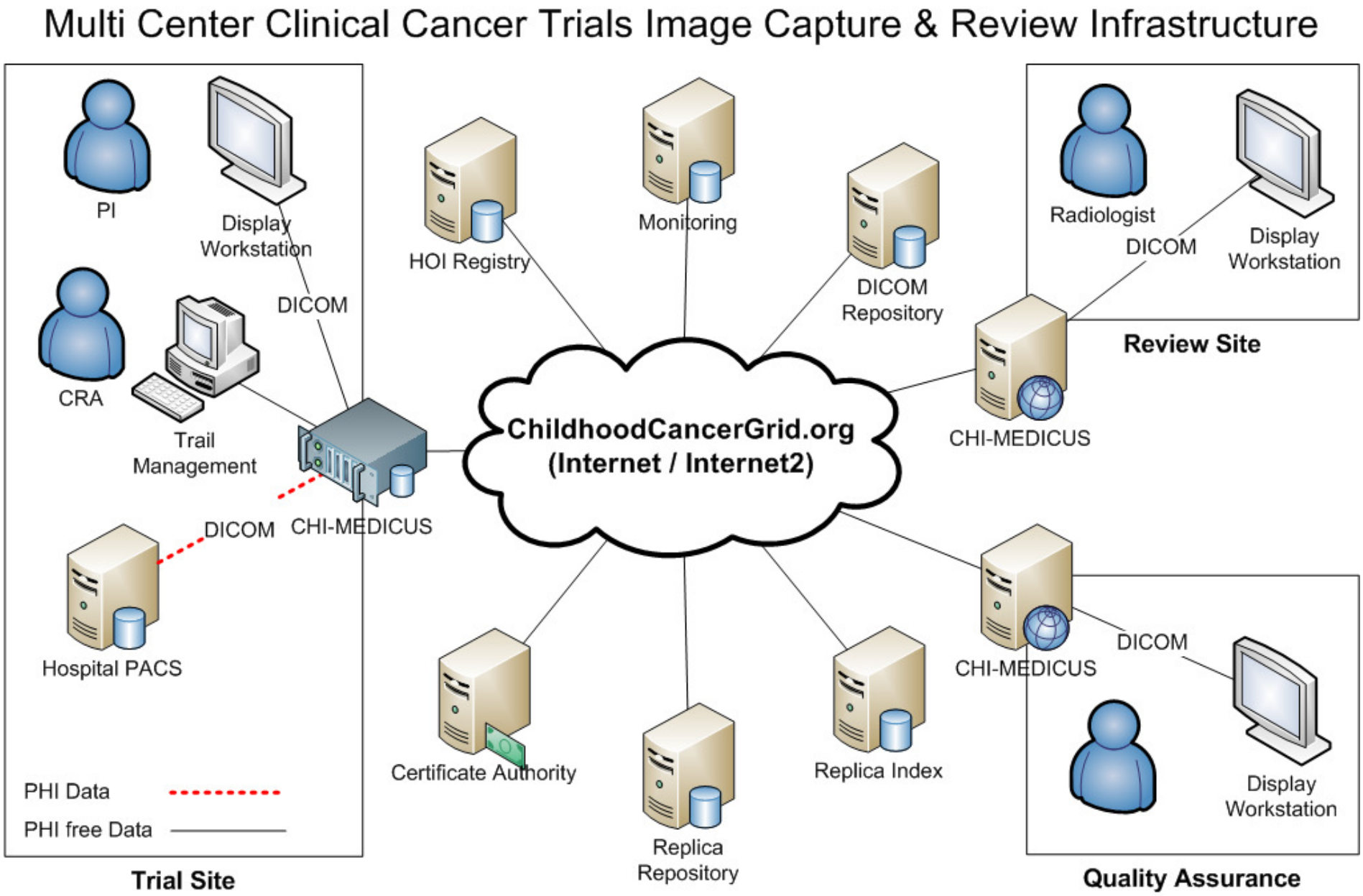
Orchestration of data movement among services



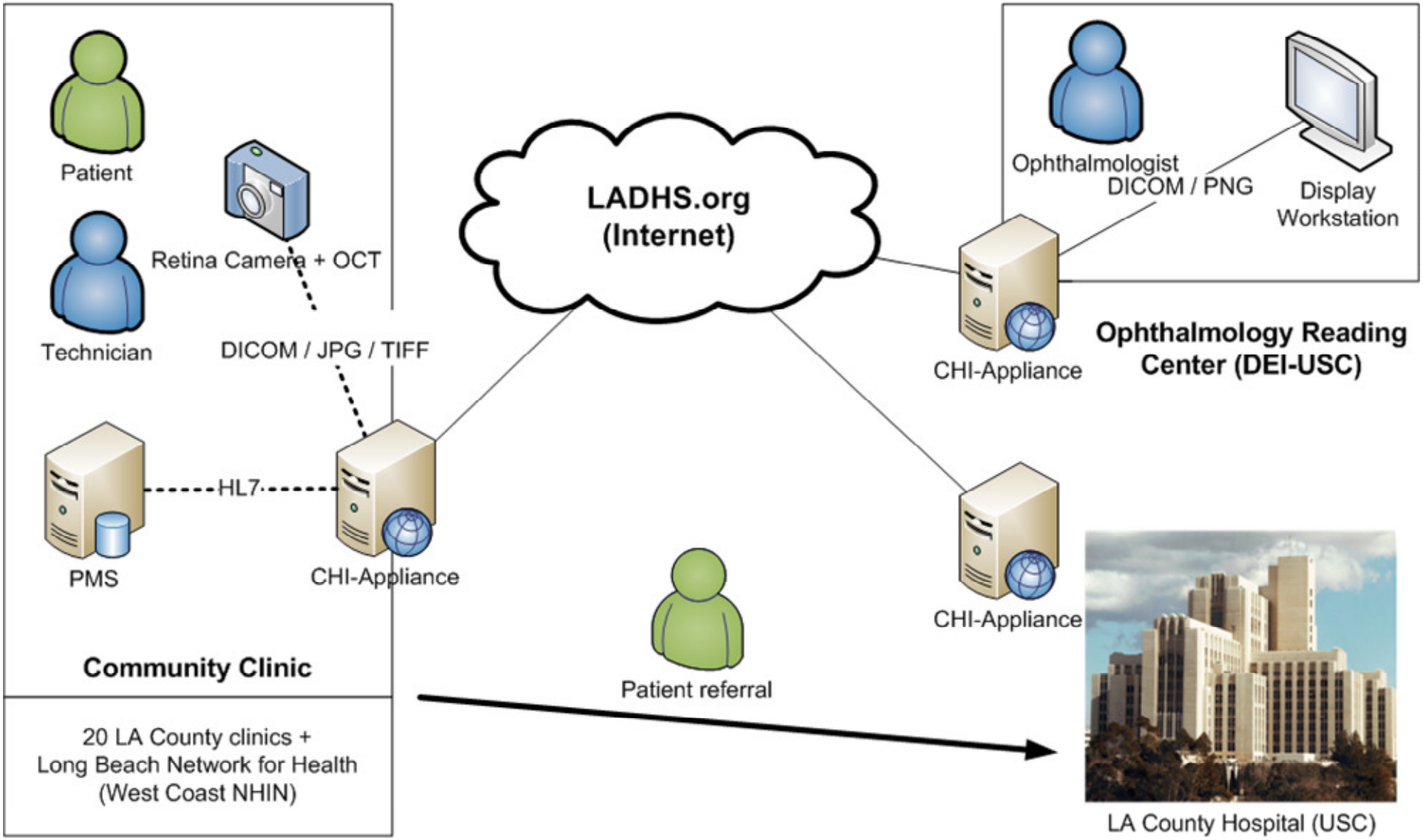
MEDICUS Use Case



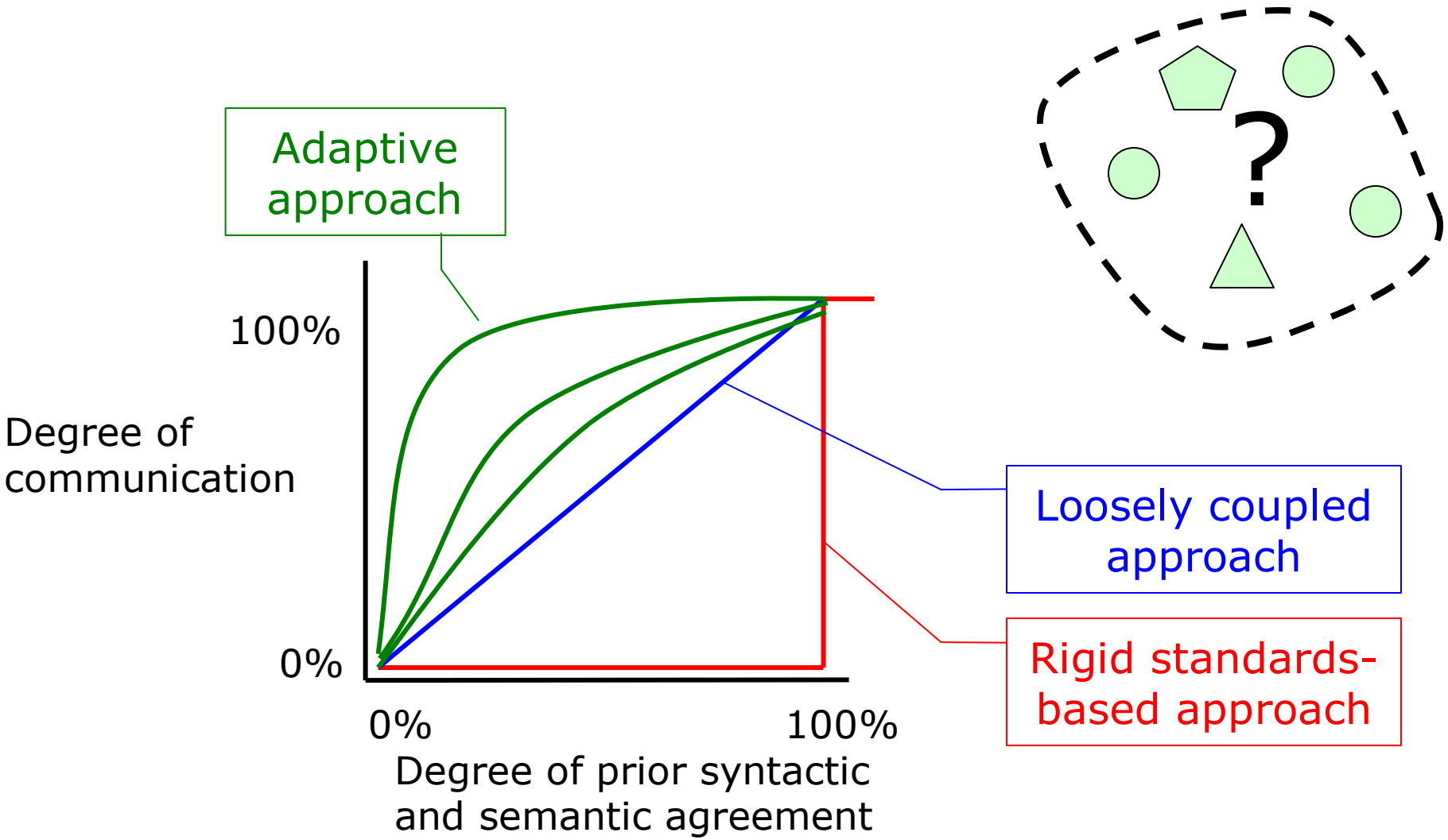
Data movement in clinical trials



Community public health: Digital retinopathy screening network



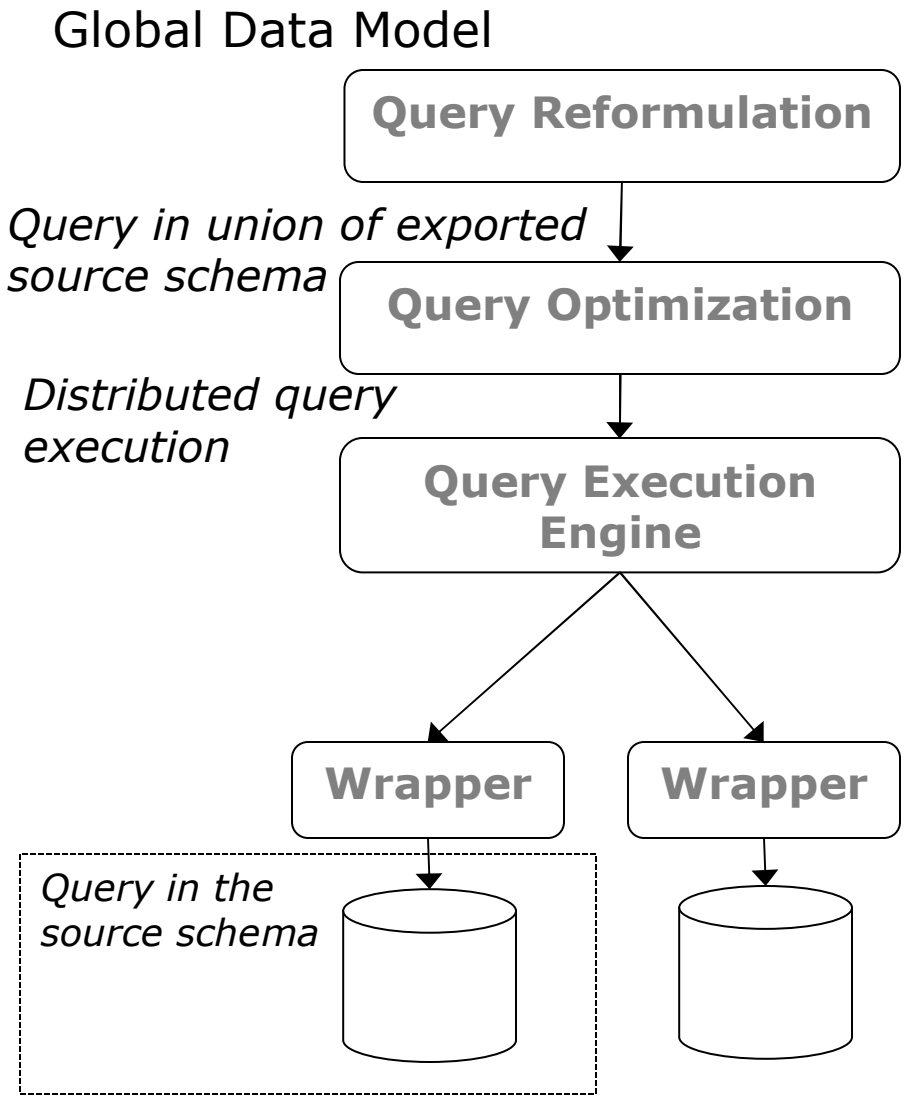
Integration: Making data usable and useful



Integration via mediation

- Map between models
- Scoped to domain use
  - Multiple concurrent use
- Bottom up mediation
  - between standards and versions
  - between local versions
  - in absence of agreement

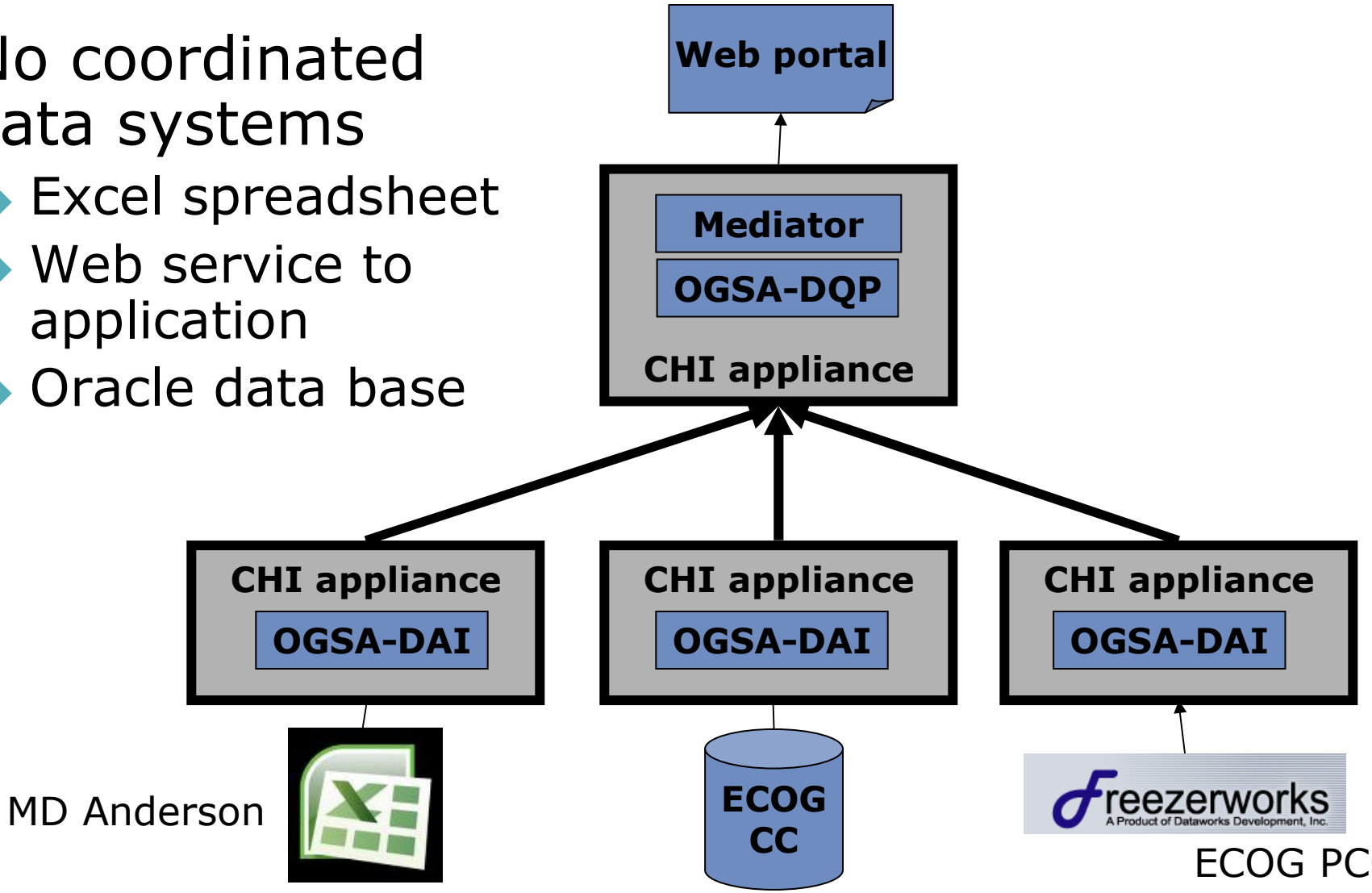
(Levy 2000)



ECOG 5202 integrated sample management

No coordinated data systems

- Excel spreadsheet
- Web service to application
- Oracle data base



Recap

- Increased recognition that information systems and data understanding are limiting factor

  … *much of the promise associated with health IT requires high levels of adoption … and high levels of use of interoperable systems (in which information can be exchanged across unrelated systems)* …. RAND COMPARE

- Health system is complex, adaptive system

  There is no single point(s) of control. System behaviors are often unpredictable and uncontrollable, and no one is "in charge." W Rouse, NAE Bridge

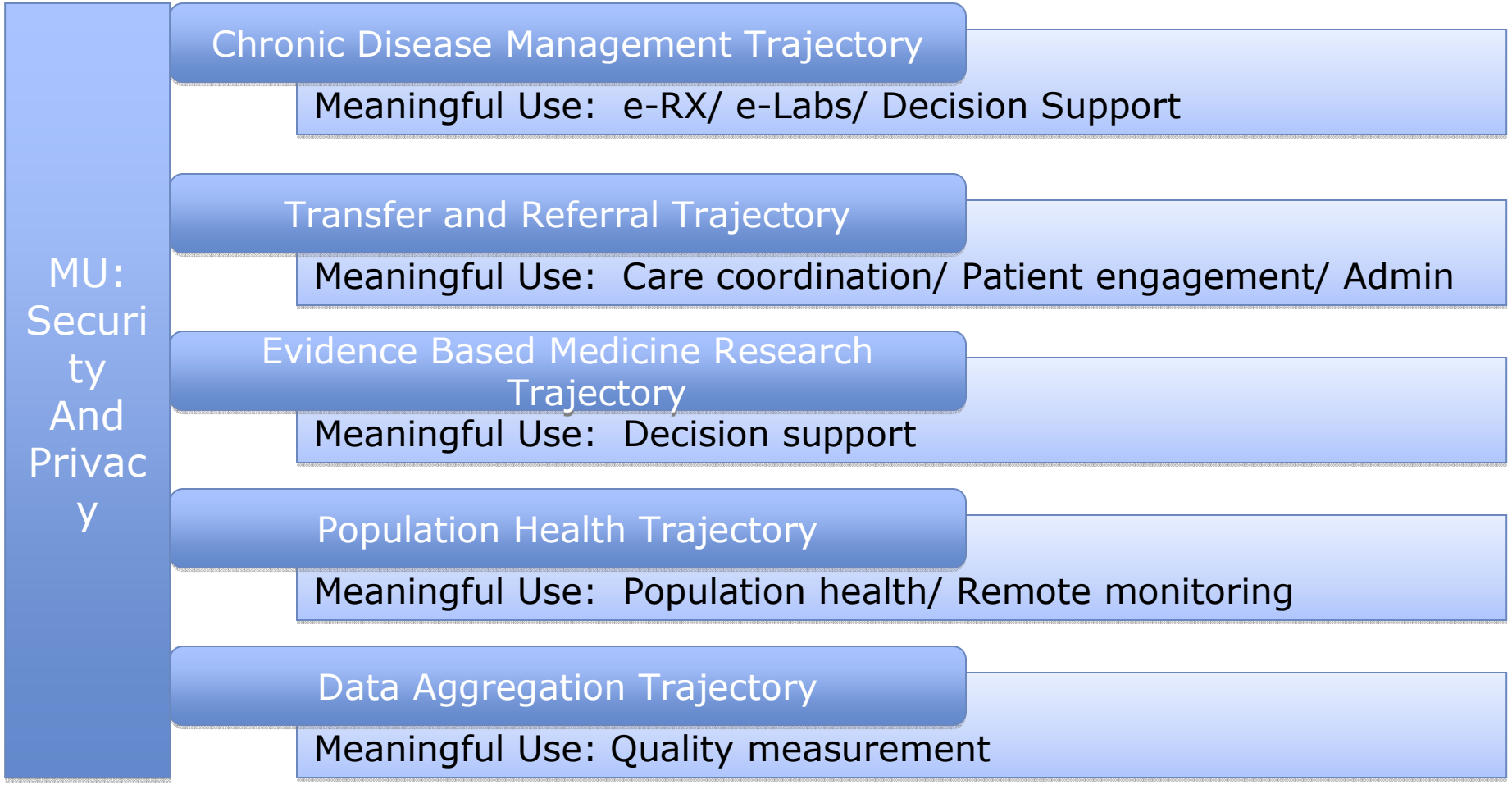
- With diverse and evolving requirements and user communitities

  … *I advocate … a model of virtual integration rather than true vertical integration….* G. Halvorson, CEO Kaiser

NCHI Grid Platform Development Trajectories

- **Chronic Disease Management Trajectory**
  - Base case: Diabetic retinopathy use case
- **Transfer and Referral Trajectory**
  - Base case: Continuity of care
- **Evidence Based Medicine Research Trajectory**
  - Base case: ECOG 5202
- **Population Health Trajectory**
  - Base case: Safety net clinic system
- **Data Aggregation Trajectory**
  - Base case: Quality measurement

NCHI Grid Platform Development and Meaningful Use



Questions?